

10 May, 2013

**Submission to the Education and Innovation Committee
Inquiry into assessment methods for senior Maths, Chemistry and Physics**

Background Experience

I am a former teacher who has held positions from researcher through to senior policy officer at Education Department level in Australia. I now hold the position of Professor of Research (BA, BEd, MEd, PhD, Institute of Education, University of London). For the past twenty years my research interest has been in the field of assessment and learning. My initial doctoral studies were supervised by the internationally renowned assessment expert Professor Caroline Gipps. I have held academic positions in Australia, Hong Kong and England where I had the privilege of working with assessment researchers and theorists such as Professors Gordon Stobart, Patricia Broadfoot, Dylan Wiliam, Paul Black and Patricia Murphy all of whom have been instrumental in researching and developing assessment practices that have influenced international assessment policies. Professors Wiliam, Black and Murphy are all subject experts in Maths, Physics and Chemistry.

The Validity of the Assessment Methods

Internationally there is recognition that the Queensland system of externally moderated, school-based assessment with the use of a standardised test – the Queensland Core Skills Test – as a method for deriving tertiary entrance ranks using the test results to scale the grades from school-based assessment is internationally unique. In a World Bank report series entitled: Systems Approach for Better Education Results (SABER) the Queensland system has been described as: “A model for other countries wanting to explore more effective ways to measure student learning in the secondary level. This is especially relevant given the global discussion on how to create **assessments that are more valid, demanding**, and not limited by the constraints of traditional, multiple-choice, paper-and-pencil formats. It is also relevant given the discussion on how to improve the teaching force and foster professional development amongst teachers.” (Allen, 2012: 20).

The Queensland assessment methods as practised by teachers of the subjects Maths, Chemistry and Physics are standards-based which is considered to be more valid for the learning goals of the 21st century. Validity, the hallmark of quality in the context of education and measurement is the “single most important criterion” for evaluating an assessment method (Koretz, 2008: 215). However, validity is a highly contested term, and as is evident there are different interpretations of the term’s meaning. Ultimately, “validity and validation are concerned with the quality or potential of an assessment method” (Newton and Shaw, forthcoming). When an assessment method is declared as valid then its potential for supporting good measurement and decision-making in the future is claimed. If the goals of the Australian education system are to teach students knowledge and skills for increasingly complex and changing world demands then students must have the knowledge of these subjects (Maths, Physics, Chemistry) but **they must also be able to apply that knowledge** to solve performance tasks that are reflective of the learning demands of competencies and skills needed for their future success. To achieve this then there is a need for teachers to provide students with a variety of opportunities to demonstrate their knowledge, skills and attitudes and it is here that

a folio of work assessed using standards is the most valid method to address such learning outcomes. This is because standardized, paper-and-pencil, multiple-choice or short answer tests are reductionist and do not allow the student to show the depth of their understanding, the extent of their application of knowledge and the level of sophistication of their skills. A standards-based assessment system is valid as it allows for a more comprehensive demonstration of learning and provides important information to the student and to the teacher for the improvement of that learning and teaching.

The OECD has just released a report (<http://www.oecd.org/edu/school/synergies-for-better-learning.htm>) that reviews evaluation and assessment frameworks for improving school outcomes. Emphasised in this timely report is the importance of aligning evaluation and assessment with educational goals and student learning objectives, and carefully conceiving the high-stakes uses of evaluation and assessment results. A **balance between improvement and accountability** goals is recommended with a comprehensive approach to assessment that includes the use of student assessment of their own progress in the development of critical thinking and social competencies.

Similarly, in the USA 'The Gordon Commission on the Future of Assessment in Education', established by the Educational Testing Service in January 2011, has just reported on how assessment can be used most effectively to advance education in the 21st century by serving the educational and informational needs of students, teachers and society. In this report recommendations are made for 'radically different forms of assessments', 'challenging performance tasks that better represent the learning activities that will help students develop the competencies needed to succeed in the 21st century'. It is recommended that systems of assessment include methods that provide teachers with '**actionable information about their students and their practice in real time**'.

It is therefore ironic and perplexing as to why there is a call for more examinations and test-based assessment, which are contrary and antithetical to international wisdom. The view that reverting to the use of numbers and the allocation of marks as a way of achieving objectivity in judgement reveals a limited understanding of the complexity of judgement practice and the move towards standards-based assessment systems internationally. Clearly, teachers need support and resources to fulfill the demands of a futures-oriented curriculum and a standards-based assessment system. Resources, professional development, standards descriptors, use of exemplars and moderation practice are all required in the implementation of a standards-based system.

Reliable Judgements of Student Outcomes

In the Queensland system high-stakes decisions about individual students are made based on their achievements during the last two years of secondary school (Years 11 and 12). This **standards-based system requires teachers to take up the important role of using their professional judgement to assess student work and to make decisions about levels of achievement**. In this system it is understood that teachers are informed by the syllabus principles of exit assessment and use evidence collected over time across a range of formats and contexts. Teachers are considered to be in the best position to judge students' levels of

achievement. The **ways in which teachers make judgements about the standard achieved is a complex process** and has given rise to debate. Teachers do need sound subject knowledge and support in making their judgements. In the Queensland system **quality control measures** built into the assessment system to address reliability and validity concerns, involve the practice of moderation and the use of expert panels.

The senior syllabus aims to establish alignment of teaching, learning, assessment and reporting through the provision of objectives, standards, subject content and assessment requirements. Each objective is categorized into dimensions considered to be key characteristics of the subject and each has an exit standard attached that aims to give an indicator for judging how well students have achieved the objective. The exit **standards**:

- State what students are **expected to know and to able to do** at each exit level of achievement
- Describe the **qualities that teachers should look for** in student responses and use to make judgements about each exit level of achievement
- Provide a **meaningful way for teachers to report** on student learning and achievement to parents
- **Provide students with guidance for their learning** and allow them to monitor their progress
- **Provide transparency** so that students and parents understand how teacher judgements are made.

In assessing the student's work using the standards **the teacher can use numbers, alpha codes or other symbols to record judgement over time**, but all must clearly show the fit with the standards descriptors in the syllabus and the students' responses. The teacher's judgement must make explicit the identified standard demonstrated and how the qualities in the student responses are aligned with the standards described in the syllabus.

Reliable judgement practice involves consistent and comparable judgements about students' achievements **within and between schools**. It is in **moderation meetings** where the issue of **reliability** is addressed. Here teachers engage in professional dialogue to discuss and evaluate judgements based on their interpretation of syllabus standards and the qualities identified in the student work. The purposes of moderation are to **achieve consistency in interpretation of the standards** or related qualities of the assessed work, together with the **comparability of the professional judgements made**; that is valid and reliable judgements that are consistent with one another and with the standards. This function of moderation involves judgements that are consistent, reliable and based on evidence with the student response. These relate to the accountability functions of moderation practice of quality assurance and quality review.

What is significant in this process is that teachers come together to compare their grading of the same samples of student work and in the process of reaching agreement, develop a shared understanding of those standards. Summative assessments by teachers are trusted if they can be shown to be dependable on standards that have a shared meaning by teachers and are comparable across the teachers involved in the teaching of that subject.

What is remarkable is that this is a less expensive system than traditional external examination programs yet a more rewarding approach for teachers, students, parents and the system (Allen, 2012:11). However, the level of resourcing needs to be maintained as does the need for teachers to keep on renewing their understanding, acceptance and practice of these methods of assessment. A key lesson acknowledged internationally is the professional learning for teachers from participating in high-stakes student assessment whether at the school level or in the external review panels. The value of this Queensland method of assessment should not be underestimated. Messages from important international assessment reviews and reports would suggest the time for consolidation rather than change is required.

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References

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